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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/072,995	02/12/2002	Shigeki Kobayashi	219467US0X	5089

22850 7590 02/13/2003

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ALEXANDRIA, VA 22314

EXAMINER

HU, HENRY S

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 02/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/072,995

Applicant(s)

ROBAYASHI ET AL.

Examiner

Henry S. Hu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION***Specification*

1. The disclosure is objected to because of the following informalities:

On page 1 at line 1-13, the title and two paragraphs need to be modified. Since **PTFE is traditionally named only for homopolymer of tetrafluoroethylene**. The examiner suggests using "PTFE" or "tetrafluoroethylene homopolymer" for the homopolymer obtained from TFE, while using the name "tetrafluoroethylene copolymer" for the copolymers obtained from TFE with other comonomers. Otherwise, it will be confusing to one having ordinary skill in the art. Appropriate correction is required.

*Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

On Claim 10 at line 3, recitation "fluorocarbon type" is vague and indefinite. Since the current recitation in Claim 10 does not clearly define the kinds of moieties for

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the type, which have been enclosed on page 8 at line 5-19 in specification, one having ordinary skill in the art may be thereby confused.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

*The limitation of parent Claim 1 in the present invention relates to a process for producing a tetrafluoroethylene polymer, which comprises polymerizing tetrafluoroethylene in an aqueous medium in the presence of a dispersant, a stabilizer and a polymerization initiator, wherein the polymerization initiator is a redox polymerization initiator comprising a halogen acid salt  $YXO_3$ /a sulfite  $Z_2SO_3$ . See other limitations of Claims 2-11.*

4. Claims 1-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Malhotra (US 4,748,217), as evidenced by Gould (Inorganic reactions and Structure, 1962 ed., see page 84).

Regarding the limitation of parent Claim 1, Malhotra discloses the preparation process using a bromate/bisulfite redox initiator system to polymerize tetrafluoroethylene

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(abstract, line 1-2). Malhotra further discloses detailed process of polymerizing tetrafluoroethylene in the presence of **a dispersant such as ammonium perfluorooctanoate, a stabilizer such as paraffin wax, and a redox binary initiator system such as potassium bromate/sodium bisulfite**, and the process has been specifically demonstrated in **Examples 1-5** (column 6, line 33 – column 8, line 60).

The limitation of parent Claim 1 in **present invention includes a redox binary initiator system of  $YXO_3/Z_2SO_3$  such as potassium bromate/sodium sulfite** by using an open language comprising, "which does not exclude using uncited component such as acid. This is further evidenced by page 10, line 8-14 of the instant specification regarding **polymerization has been carried out under an acidic condition** by an addition of an acid such as hydrochloric acid. In view of the statement disclosed by Gould as "**Bronsted base in either ions or molecules will take on protons to form the species called the conjugated acid of that base**" (page 84, paragraph 3), a reasonable basis exists to believe that **with the addition of acid mentioned in present invention the sulfite ion will add the proton to form the bisulfite ion, which reads on Malhotra's redox system, the present invention would inherently possess the bisulfite ions. A balanced chemical equation for this reaction can be as following:**

$$Na_2SO_3 + HCl = NaHSO_3 + NaCl$$

**to show the relationship between sulfite and bisulfite ions.**

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5. Regarding Claims 2 and 3, Malhotra discloses in Example 1 that **potassium bromate was added preliminarily, while sodium bisulfite was added continuously at 10 ml/min** (column 6, line 35-48).

Regarding Claim 4, Malhotra discloses potassium bromate is used as discussed above.

Regarding Claim 5, Malhotra discloses **potassium bromate/ammonium bisulfite** can be used as redox binary initiator system (column 1, line 45-48).

Regarding Claim 6, Malhotra disclose in Example 1 that potassium bromate was added preliminarily, while sodium bisulfite was added continuously at 10 ml/min (column 6, line 35-48).

Regarding Claims 7-9, Malhotra disclose the amount will be **5-200 ppm for potassium bromate, and 5-400 ppm for sodium bisulfite** (column 4, line 21-27).

Regarding Claims 10-11, Malhotra disclose the polymerization is in the presence of a dispersant such as ammonium perfluorooctanoate as well as a stabilizer such as paraffin wax (column 3, line 44-61; also see Examples 1-5).

### ***Conclusion***

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6. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. The following references relate to a process for producing a tetrafluoroethylene polymer using a redox polymerization initiator of a halogen acid salt  $YXO_3$ /a sulfite  $Z_2SO_3$ :

US Patent No. 4,908,410 to Malhotra disclose preparation process of copolymer from tetrafluoroethylene and a dioxole monomer using a redox binary initiator system of potassium permanganate/oxalic acid (column 2, line 51-54) in 30-300 ppm on water. Therefore, Malhotra fails to teach the limitation of present invention.

7. US Patent No. 3,110,704 to Haliwell discloses preparation process of homopolymer from tetrafluoroethylene monomer using a redox binary initiator system of ammonium persulfate /sodium bisulfite (column 1, line 62) on water. Therefore, Haliwell fails to teach the limitation of present invention.

US Patent No. 4,692,493 to Sulzbach et al. disclose preparation process of copolymer from tetrafluoroethylene and ethylene using a redox binary initiator system of peroxidic compound with disulfite, thiosulfate, dithionite, hydrogen sulfite or sulfinate (column 5, line 36-40) on water. Therefore, Sulzbach et al. fail to teach the limitation of present invention.

8. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Henry S. Hu whose telephone number is (703) 305-4918. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (703) 308-2450. The fax number for the organization where this application or proceeding is assigned is (703) 746-9051. Any inquiry of general nature or relating to the status of this application or proceeding should be directed to the group receptionist whose telephone number is (703) 308-0661.



Henry S. Hu

February 7, 2003



DAVID W. WU  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700